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ABSTRACT

Management should provide continuing instructor training to maintain and improve both the technical competence and instructional skills of instructors. Continuing training programs should address both instructional skills and technical skills. Training organizations must be both proactive and reactive in the development of instructor continuing training program content. Data to determine the training needs of instructors should include instructor evaluation by training managers and training supervisors, student evaluations of instructors, and task-based post-training feedback from former trainees and their supervisors. After each instructor has completed initial training and received instructor certification, continuing training should be provided periodically to maintain and improve both technical competence and instructional skills. (YLB)

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PROVIDING CONTINUING INSTRUCTOR TRAINING

PRESENTED BY DENNIS BEAN
INPO

AT

MIDWEST NUCLEAR TRAINING ASSOCIATION
THIRD ANNUAL NUCLEAR INSTRUCTOR'S WORKSHOP
SEPTEMBER 21, 1988

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Introduction

First, let me thank you for the opportunity to speak to you this morning. It is my pleasure to speak at this workshop about what I believe to be a very important topic. Instructors are the key to a successful training program and no matter how good our training programs are for preparing plant personnel, we would fail if it were not for capable and technically competent instructors.

Before I begin talking about Providing Continuing Instructor Training, let me share a story with you from my past when I was an Associate Professor of Computer Science. In the mid 1970's, computer science technology was changing rapidly. After teaching about three years and spending almost all my time preparing for and presenting courses at the college, I discovered that many students of all ages were asking me questions about hardware, software, and data processing trends that I neither knew the answer to, nor could find the answer for in my text books. Suddenly, I realized that technology was swiftly passing me by. I knew I had to do something fast, so I thought about how I could correct my problem.

I contacted the Dean of the College and described my problem. After considerable thought, he and the College President recognized that the problem was real and, if not addressed, would reduce the quality of instruction. The three of us came to a mutual agreement that I would take a one year

SABBATICAL AND WORK IN A STATE-OF-THE-ART COMPUTER SERVICES ORGANIZATION LOCATED NEAR THE COLLEGE. FURTHERMORE, WE FELT IT BEST TO REPEAT THE ONE-YEAR SABBATICAL EVERY FOURTH YEAR. PARTICIPATING IN THIS PERIODIC FASHION PERMITTED ME TO MAINTAIN MY TECHNICAL COMPETENCE, THUS PROVIDING MORE EFFECTIVE INSTRUCTION.

PRESENTATION

IN MY TALK I AM GOING TO DISCUSS:

- WHY IS CONTINUING INSTRUCTOR TRAINING NEEDED?
- WHAT SHOULD BE INCLUDED?
- HOW DO WE DETERMINE NEEDS?
- WHERE ARE PROBLEMS OCCURRING?
- WHEN DO WE PROVIDE CONTINUING TRAINING?

WE SHOULD START WITH ONE VERY IMPORTANT QUESTION: WHY SHOULD CONTINUING TRAINING BE PROVIDED FOR OUR INSTRUCTORS?

MANAGEMENT SHOULD PROVIDE CONTINUING TRAINING THROUGH ESTABLISHED PROGRAMS TO MAINTAIN AND IMPROVE BOTH THE TECHNICAL COMPETENCE AND INSTRUCTIONAL SKILLS OF INSTRUCTORS.

WHAT SHOULD BE ADDRESSED IN CONTINUING TRAINING PROGRAMS FOR INSTRUCTORS?

INSTRUCTIONAL SKILLS

INSTRUCTIONAL SKILLS CONTINUING TRAINING SHOULD COVER PLANNED TOPICS AND BE PROVIDED TO ALL PERSONNEL WITH TRAINING ASSIGNMENTS.

THE FOLLOWING SHOULD BE CONSIDERED FOR INSTRUCTIONAL SKILLS CONTINUING TRAINING:

- INSTRUCTION TO CORRECT IDENTIFIED PERFORMANCE DEFICIENCIES
- INSTRUCTION ON NEW INSTRUCTIONAL METHODS, TECHNIQUES, AND EQUIPMENT
- INFORMATION/INSTRUCTION ON CHANGES IN TRAINING-RELATED REGULATIONS, STANDARDS, AND PROCEDURES
- INFORMATION/INSTRUCTION RELATED TO THE NEEDS OF THE ORGANIZATION

- REFRESHER TOPICS FROM INITIAL INSTRUCTIONAL SKILLS TRAINING

Technical Skills

TECHNICAL SKILLS CONTINUING TRAINING SHOULD BE PROVIDED TO ALL INSTRUCTORS THAT PROVIDE DIRECT INSTRUCTIONAL SUPPORT TO PLANT-SPECIFIC TRAINING.

THE FOLLOWING SHOULD BE CONSIDERED FOR TECHNICAL SKILLS CONTINUING TRAINING:

- Operations and Shift Technical Advisor Instructors
  - STRUCTURED IN-PLANT TIME DIRECTED TOWARD MAINTENANCE OF FAMILIARITY WITH PLANT CONFIGURATION, WATCHSTATION REQUIREMENTS AND PRACTICES, AND PROCEDURAL AND ADMINISTRATIVE GUIDANCE PERTINENT TO THE TRAINEE POPULATION THE INSTRUCTOR TEACHES
  - PARTICIPATION IN CONTINUING TRAINING, INCLUDING REVIEWS OF APPROPRIATE INDUSTRY OPERATING EXPERIENCES AND LICENSED OPERATOR REQUALIFICATION

WHEN APPROPRIATE, PERTINENT TO THE TRAINEE POPULATION THE INSTRUCTOR TEACHES AND THE LICENSE THE INSTRUCTOR HOLDS

o MAINTENANCE, HEALTH PHYSICS, AND CHEMISTRY INSTRUCTORS

- MAINTENANCE OF FAMILIARITY WITH PLANT CONFIGURATION; TECHNICIAN OR CRAFT PRACTICES; PROCEDURAL AND ADMINISTRATIVE GUIDANCE; AND ANALYTICAL OR MAINTENANCE EQUIPMENT THROUGH STRUCTURED IN-PLANT PERIODS, IN-PLANT MEETING ATTENDANCE, AND APPROPRIATE FORMAL AND INFORMAL COMMUNICATIONS

- PARTICIPATION IN CONTINUING TRAINING, INCLUDING REVIEWS OF APPROPRIATE INDUSTRY OPERATING EXPERIENCES AND BY ATTENDING CONTINUING TRAINING PERTINENT TO THE TRAINEE POPULATION THE INSTRUCTOR TEACHES AND PARTICIPATION IN VENDOR SCHOOLS OR OTHER TECHNICAL SCHOOLS FOR NEW EQUIPMENT OR TECHNIQUES THAT IMPACT THE INSTRUCTOR'S AREA OF TECHNICAL EXPERTISE

- ATTENDANCE AT PROFESSIONAL OR OTHER APPROPRIATE TECHNICAL MEETINGS AND WORKSHOPS

THESE ACTIVITIES MAY NOT ALL APPLY TO, OR BE APPROPRIATE FOR, INSTRUCTORS THAT ONLY INSTRUCT IN THE FUNDAMENTALS OR GENERIC (NOT PLANT-SPECIFIC) PROGRAM AREAS.

STRUCTURE SHOULD BE ESTABLISHED THROUGH ADVANCED PLANNING OF IN-PLANT PERIODS USING ESTABLISHED OBJECTIVES AND CONSIDERATION OF CURRENT OPPORTUNITIES. INSTRUCTOR KNOWLEDGE AND PERFORMANCE WEAKNESSES SHOULD ALSO BE CONSIDERED.

HOW DO WE DETERMINE THE CONTINUING TRAINING NEEDS OF EACH INSTRUCTOR?

TRAINING ORGANIZATIONS MUST BE BOTH PROACTIVE AND REACTIVE IN THE DEVELOPMENT OF INSTRUCTOR CONTINUING TRAINING PROGRAM CONTENT. THE INDIVIDUAL(S) RESPONSIBLE FOR COORDINATING AND DEVELOPING THE INSTRUCTOR CONTINUING TRAINING PROGRAM SHOULD USE A SYSTEMATIC PROCESS TO DEFINE AND BUILD A STRUCTURED CONTINUING TRAINING PROGRAM THAT MEETS THE NEEDS OF EACH INSTRUCTOR AND THE ORGANIZATION.

WHEN INPO ACCREDITATION TEAMS VISIT TRAINING ORGANIZATIONS TO EVALUATE HOW WELL TRAINING PROGRAMS MEET THE OBJECTIVES AND CRITERIA DEFINED IN INPO 85-002, REVISION 1, THE ACCREDITATION OF TRAINING IN THE NUCLEAR POWER INDUSTRY, AND IN INPO 88-001, MAINTAINING THE ACCREDITATION OF TRAINING IN THE NUCLEAR POWER INDUSTRY, SEVERAL RECURRING PROBLEMS ARE BEING IDENTIFIED BY THE TEAMS. A SUMMARY OF THESE RECURRING PROBLEMS WAS MAILED ON

AUGUST 5, 1988 TO YOUR ADMINISTRATIVE POINT OF CONTACT (APOCs) WITH COPIES TO YOUR EXECUTIVE POINTS OF CONTACT (EPOCs) FROM OUR ACCREDITATION DIVISION DIRECTOR, KENT HAMLIN. THREE OF THOSE RECURRING PROBLEMS IDENTIFIED DURING ACCREDITATION TEAM VISITS ARE DIRECTLY RELATED TO THE DEVELOPMENT AND QUALIFICATION OF STAFF:

- o INSTRUCTORS ARE NOT EVALUATED PERIODICALLY FOR TECHNICAL KNOWLEDGE AND INSTRUCTIONAL SKILLS IN ALL APPROPRIATE TRAINING SETTINGS.

- o THE EVALUATION INSTRUMENTS USED TO EVALUATE INSTRUCTORS IN THE SIMULATOR AND LABORATORY SETTINGS ARE NOT APPROPRIATE FOR THE SPECIFIC SETTING.

- o THE CONTINUING DEVELOPMENT OF INSTRUCTORS DOES NOT ADEQUATELY MAINTAIN AND IMPROVE THE INSTRUCTORS' TECHNICAL KNOWLEDGE.

SINCE JANUARY OF THIS YEAR, INPO HAS IDENTIFIED A NUMBER OF PROBLEMS ASSOCIATED WITH SIMULATOR TRAINING EFFECTIVENESS BASED ON CONDUCTING SIMULATOR EVALUATIONS. SOME OF THOSE PROBLEMS WERE RELATED TO INSTRUCTOR PERFORMANCE. SPECIFICALLY, SIMULATOR INSTRUCTORS AND EVALUATORS DO NOT DISCUSS MANY OPERATOR PERFORMANCE PROBLEMS IN POST-EXERCISE CRITIQUES.

EXAMPLE - SIMULATOR INSTRUCTORS DID NOT CRITIQUE PERFORMANCE PROBLEMS USING EMERGENCY OPERATING PROCEDURES, SUCH AS

THE OPERATORS' FAILURE TO PROMPTLY LOWER REACTOR WATER LEVEL TO CONTROL REACTOR POWER DURING SEVERAL FAILURE-TO-SCRAM EXERCISES.

ON SEVERAL OTHER OCCASIONS, OPERATING CREWS EXPERIENCED PERFORMANCE PROBLEMS ASSOCIATED WITH COMMUNICATIONS AND TEAMWORK. WEAKNESSES WERE OBSERVED BUT NEITHER IDENTIFIED NOR CORRECTED BY SIMULATOR TRAINING PERSONNEL.

EXAMPLE - THE FOREMAN GAVE THE COMMAND, "GO TO FIVE PERCENT PER MINUTE. WITHOUT ACKNOWLEDGING THE ORDER, THE OPERATOR ADJUSTED THE TURBINE UNLOADING RATE FROM ONE PERCENT PER MINUTE TO TWO PERCENT PER MINUTE. AFTER ADJUSTMENT THE OPERATOR STATED "GOING AT TWO PERCENT PER MINUTE." THERE WAS NO ACKNOWLEDGEMENT BY THE FOREMAN.

IN ORDER FOR US TO KNOW THE AREAS WHERE OUR INSTRUCTORS NEED IMPROVEMENT, WE MUST DEVELOP VALID INSTRUCTOR EVALUATION INSTRUMENTS FOR EACH TRAINING SETTING AND EVALUATE EACH OF OUR INSTRUCTORS PERIODICALLY FOR BOTH TECHNICAL KNOWLEDGE AND INSTRUCTIONAL SKILLS AND PROVIDE TIMELY FEEDBACK AND CORRECTIVE ACTION, AS APPROPRIATE. BOTH TRAINING MANAGERS AND TRAINING SUPERVISORS SHOULD BE DIRECTLY INVOLVED IN CONDUCTING INSTRUCTOR EVALUATIONS. PERSONNEL CONDUCTING INSTRUCTOR EVALUATIONS SHOULD BE TRAINED IN, AND APPLY, EFFECTIVE OBSERVATION SKILLS TO COLLECT THE NECESSARY FACTS TO SUPPORT CRITIQUES OF INSTRUCTOR PERFORMANCE PROBLEMS. THESE KINDS OF ACTIVITIES ARE ESSENTIAL IF

WE EXPECT TO DEVELOP AND DELIVER AN INSTRUCTOR CONTINUING TRAINING PROGRAM THAT MEETS OUR INSTRUCTORS NEEDS.

OUR NUCLEAR INSTRUCTORS WORK IN A RAPIDLY CHANGING ENVIRONMENT. THE INSTRUCTOR IN TODAY'S NUCLEAR ENVIRONMENT MUST, SOMEHOW, BE KEPT ABREAST OF THESE CHANGES. WE NEED TO GIVE EACH OF OUR INSTRUCTORS THE OPPORTUNITY TO LEARN ABOUT PLANT MODIFICATIONS, PROCEDURE CHANGES, AND LESSONS LEARNED FROM PLANT AND INDUSTRY EXPERIENCES. WE NEED TO SCHEDULE TIME FOR OUR INSTRUCTORS TO BECOME INVOLVED IN STRUCTURED IN-PLANT ACTIVITIES. WE NEED TO CAREFULLY EVALUATE THE NEEDS OF EACH INSTRUCTOR AND THE ORGANIZATION, AND PLAN FOR IN-PLANT TIME TO MEET THOSE NEEDS. TECHNICAL COMPETENCY AND CREDIBILITY ARE EASY TO LOSE AND VERY HARD TO REGAIN. BOTH PLANT AND TRAINING MANAGEMENT NEED TO SHARE IN THE RESPONSIBILITY TO ENSURE THAT OUR INSTRUCTORS HAVE THE OPPORTUNITY TO ADEQUATELY MAINTAIN AND IMPROVE THEIR TECHNICAL KNOWLEDGE.

I HAVE NOT YET FULLY ANSWERED THE QUESTION "HOW DO WE DETERMINE THE TRAINING NEEDS OF EACH INSTRUCTOR?" OTHER VALID INDICATORS EXIST TO HELP ANSWER THIS QUESTION. STUDENT INSTRUCTOR EVALUATIONS AND POST-TRAINING FEEDBACK THAT IS TASK BASED FROM FORMER TRAINEES AND THEIR SUPERVISORS PROVIDE VALUABLE DATA THAT CAN AND SHOULD BE ANALYZED TO DETERMINE INSTRUCTOR CONTINUING TRAINING NEEDS. INSTRUCTORS SHOULD ALSO BE SURVEYED TO IDENTIFY TOPICS THEY FEEL WOULD IMPROVE THEIR SKILLS AND KNOWLEDGE.

ALL OF THESE DIFFERENT TYPES OF DATA SHOULD BE REVIEWED AND ANALYZED BY THE PROGRAM DEVELOPMENT STAFF RESPONSIBLE FOR INSTRUCTOR TRAINING TO FOCUS THE CONTINUING TRAINING PROGRAM ON THE NEEDS OF THE INSTRUCTOR.

WHEN SHOULD INSTRUCTOR CONTINUING TRAINING BE PROVIDED?

AFTER EACH INSTRUCTOR HAS COMPLETED INITIAL TRAINING AND RECEIVED INSTRUCTOR CERTIFICATION, CONTINUING TRAINING SHOULD BE PROVIDED PERIODICALLY TO MAINTAIN AND IMPROVE BOTH TECHNICAL COMPETENCE AND INSTRUCTIONAL SKILLS.

THE KEY TO A SUCCESSFUL INSTRUCTOR CONTINUING TRAINING PROGRAM IS TO MONITOR ALL OF THE AVAILABLE INDICATORS OF INSTRUCTOR AND WORKER PERFORMANCE AND BUILD PROGRAMS THAT ADDRESS:

- O INSTRUCTOR JOB PERFORMANCE
- O CHANGES IN KNOWLEDGE AND SKILL REQUIREMENTS
- O NEEDS OF THE ORGANIZATION

IF PLANNED AND MANAGED, INSTRUCTOR CONTINUING TRAINING PROGRAMS WILL BE EFFECTIVE IN MAINTAINING FULLY QUALIFIED INSTRUCTORS FOR ALL TRAINING SETTINGS.

Conclusion

Let me conclude by saying that in order for the plants to operate safely and efficiently, plant management needs the best trained and most qualified personnel that training can provide. As I said earlier, instructors are the key to successful training programs. It is our responsibility to provide each instructor with the necessary instructional skills and technical competence to deliver quality and effective instruction to every trainee. If we do not provide our instructors with well planned instructor continuing training programs to remove identified weaknesses, then we have not completed our jobs as professional trainers.